

TRANSLATION

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference IPY-172	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/JP2004/017062	International filing date (<i>day/month/year</i>) 17.11.2004	Priority date (<i>day/month/year</i>) 17.11.2003
International Patent Classification (IPC) or national classification and IPC G02F1/015, G02B26/02, H04B10/16		
Applicant NEC CORPORATION		

1.	This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.	
2.	This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.	
3.	This report is also accompanied by ANNEXES, comprising: a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of <u>6</u> sheets, as follows: <input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).	
4.	This report contains indications relating to the following items: <input checked="" type="checkbox"/> Box No. I Basis of the report <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application	

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

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Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1, 2, 5, 6, 9-18 as originally filed/furnished
- pages* 3, 4, 7, 8 received by this Authority on 16.09.2005
- pages* _____ received by this Authority on _____
- ☒ the claims:
- nos. 2, 3, 12, 13, 16 as originally filed/furnished
- nos.* _____ as amended (together with any statement) under Article 19
- nos.* 1, 4-11, 14, 15, 17, 18 received by this Authority on 16.09.2005
- nos.* _____ received by this Authority on _____
- ☒ the drawings:
- sheets fig. 1-13 as originally filed/furnished
- sheets* _____ received by this Authority on _____
- sheets* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1.	Statement		
	Novelty (N)	Claims <u>3, 5-7, 9-18</u>	YES
		Claims <u>1, 2, 4, 8</u>	NO
	Inventive step (IS)	Claims _____	YES
		Claims <u>1-18</u>	NO
	Industrial applicability (IA)	Claims <u>1-18</u>	YES
		Claims _____	NO
2.	Citations and explanations (Rule 70.7)		
	<p>Document 1: JP 57-155503 A (Matsushita Electric Industrial Co., Ltd.), 25 September 1982, page 2, upper right column, line 3 to page 3, lower left column, line 3, and fig. 2 to 6 (Family: none)</p> <p>Document 2: JP 2000-216424 A (NEC Corp.), 04 August 2000, paragraphs 31 to 52 and fig. 1 to 6 (Family: none)</p> <p>Document 3: JP 7-15093 A (NEC Corp.), 17 January 1995, entire text, all drawings & EP 631168 A1 & US 5499259 A</p> <p>Document 4: JP 62-80614 A (The Furukawa Electric Co., Ltd.), 14 April 1987, page 2, upper left column, line 12 to lower left column, line 9 and fig. 1 (Family: none)</p> <p>Document 5: JP 4-328510 A (International Business Machines Corp.), 17 November 1992, entire text, all drawings & EP 505655 A1 & US 5271075 A</p> <p>Claims 1, 2, 4 and 8 lack novelty and do not involve an inventive step in the light of document 1. The configuration disclosed in document 1 (fig. 3) can be</p>		

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Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

said to include a sort of switching means.

Claims 3, 9 to 12 and 16 to 18 do not involve an inventive step in the light of documents 1 and 2. The photovoltaic elements disclosed in document 2 act as waveguide tubes (paragraph 44), and can be configured so as to transmit light to some extent. Such being the case, it would have been easy for a person skilled in the art to conceive of substituting the nipi-type semiconductor photovoltaic elements that are disclosed in document 2 for the semiconductor photovoltaic elements in the device disclosed in document 1.

Claims 5 and 13 do not involve an inventive step in the light of documents 1 and 3 or documents 1 to 3. It would have been easy for a person skilled in the art to conceive of using the optical elements disclosed in document 1 as the optical elements in an absorptive modulator, a refractive modulator or the like, as disclosed in document 3.

Claims 6 and 14 do not involve an inventive step in the light of documents 1 and 4 or documents 1, 2 and 4. In the light of document 4 it would have been easy for a person skilled in the art to conceive of introducing a voltage source into the device that is disclosed in document 1.

Claims 7 and 15 do not involve an inventive step in the light of documents 1 and 5 or documents 1, 2 and 5. In the light of document 5 it would have been easy for a person skilled in the art to conceive of using the device disclosed in document 1 as a planar optical circuit.